
U.S. Department of the Interior • U.S. Geological Survey

MINERAL INDUSTRY SURVEYS

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IRON ORE IN DECEMBER 1996

U.S. mine production of iron ore in December was 4.5% lower than that of November, according to the U.S. Geological Survey. Shipments increased by 6.2% and mine stocks decreased by 14.7%. Consumption and trade data for December will be included in a subsequent report.

Note: Revisions made to data for 1995 and 1996 are shown in Table 2.

Yearend Trends

Based solely on monthly data, U.S. iron ore production through December was 0.5% lower than that of the same period in 1995 and shipments were up by 1.4%. Consumption fell by 3.3%. Net imports through November were slightly lower than those through November 1995. U.S. production and imports of iron ore from 1965 through 1995 are shown in figure 1. Figure 2 shows world direct reduced iron (DRI) production from 1986 through 1995. Employment at U.S. iron mines and beneficiation plants, for the years 1980 through 1995, are shown in figure 3. Figure 4 compares world iron ore production with that of major producing countries from 1972 through 1995.

Major Changes at Eveleth (EVTAC) Mines

The former Eveleth Mines, an iron ore producer on the Mesabi Range in northeast Minnesota, is going through a period of significant transition. First, there were changes in the management and ownership structure after Oglebay Norton Co. announced that, as of December 31, 1996, it would not extend its contract as manager and employer of Eveleth Mines. (See IRON ORE IN MARCH 1996.) That announcement was followed by another stating that Oglebay was selling its interest in the taconite operation that it had managed since operations were begun in 1965. (See IRON ORE IN MAY 1996.)

Following those changes, the operation was reorganized from Eveleth Mines to Eveleth Mines LLC known as EVTAC

Mining. Eveleth Mines was not a legal entity. It was a collective name for Eveleth Taconite Co., formed in 1965, and Eveleth Expansion Co., formed in 1976. Eveleth Taconite was 85% owned by Rouge Steel Co. and 15% by Oglebay Norton Co. Eveleth Expansion was 56% owned by Virginia Horn Taconite Co., a wholly owned subsidiary of Armco, 23.5% owned by Ontario Eveleth, a wholly owned subsidiary of Stelco Inc. and 20.5% by Onco Eveleth Co., a wholly owned subsidiary of Oglebay Norton Co. Oglebay Norton Taconite Co. (Ontac) was another subsidiary of Oglebay Norton, which was the employment company for Eveleth Taconite Co. and Eveleth Expansion Co.

The new company, EVTAC Mines, is 45% owned by Eveleth Taconite Co., a wholly owned subsidiary of Rouge Steel Co., Dearborn, MI, 40% owned by Virginia Horn Taconite Co., a wholly owned subsidiary of AK Steel Corp., Middletown, OH, and 15% owned by Ontario Eveleth, a wholly owned subsidiary of Stelco Inc., Hamilton, Ontario. The Thunderbird Mining Co., a wholly owned subsidiary of EVTAC, has replaced Oglebay Norton Taconite Co. as the employee company at the Thunderbird Mine and Fairlane plant.

Another change is the relationship between the management of the operation and the steelmakers that own it. EVTAC is a limited liability company that is managed and operated locally and sells its product on a contract sales basis to its members as well as on the open market. As part of this new relationship, EVTAC will arrange its own financing. Unlike other iron ore operations, EVTAC will have to deal directly with a bank or other lending institution to obtain financing. That makes EVTAC unique among taconite operations on the Mesabi Range.

The next part of the transition is aimed at increasing productivity at the mine and the plant. At the mine, EVTAC will buy 240-ton trucks as the 190-ton trucks are phased out.

Hydraulic excavators with 25-cubic-yard capacity buckets have been purchased. The all-hydraulic operation eliminates the need for handling large electric power cables. At the plant, production capacity will be increased through improvements to the processing facilities by the addition of centralized computer controls. Capacity is expected to increase by 10% to 5.8 million metric tons per year (Mt/yr) by 2000 at the same employment level. Shipments will be primarily by rail to Great Lakes ports for loading into vessels, but all-rail shipments also will be substantial. All-rail movements in 1997 are expected to be 1 Mt/yr to 1.5 Mt/yr.^{1,2}

North Gains Control of IOC

North Limited, an Australian resources company, announced that an agreement had been reached for the purchase of a 59.3% interest in the Iron Ore Company of Canada (IOC). North has control and management of Robe River Iron Associates which operates a mine in Australia's Pilbara region and is a large seaborne trader in iron ore. The controlling interest in IOC was purchased from two U.S. steel companies, Bethlehem Steel Corp., Bethlehem, PA (37.6%) and National Steel Corp., Pittsburgh, PA (21.7%) for \$US230 million. IOC, Canada's biggest iron ore producer and one of the world's largest pellet producers, has its mining operations at Carol Lake, Labrador. The mine, which has five open pits, a concentrator and a pellet plant, is connected by a company-owned 420-km (261-mile) railroad to its port facility in Sept-Iles, Quebec. According to an IOC spokesman, the Carol Lake deposit has at least 1 billion tons of reserves and the nearby Luce deposit 600 million tons. The company typically produces more than 15 Mt/yr of ore, of which 10 Mt/yr is pelletized with the balance shipped as concentrates. The agreement is subject to regulatory and government approval and the consent of the remaining shareholders, Mitsubishi (21.8%), Dofasco (6.9%), and the Labrador Iron Ore Royalty Income Fund (12%). The purchase is expected to be finalized by the end of the first quarter of calendar year 1997. IOC sales in 1996 were primarily to North America (50%) and Europe (33%) with the balance to Asia, mainly Japan and Taiwan. IOC's North American sales will continue to be made under long-term contracts, primarily with Bethlehem and National.

A company spokesman said that North had a different philosophy from the previous IOC ownership and intended to capitalize on the rapidly-expanding Electric Arc Furnace (EAF) steel production in the United States and Asia by moving towards production of high quality direct reduction pellets. The engineering has been completed and approval given for an 11.5 Mt/yr flotation plant that will be used to lower the silica in pellets throughout a range of products from a 4.5% acid pellet to a 1.3% DR grade pellet. Construction of the plant could begin in June 1997. North would seek the approval of shareholders for significant investment in the railway and, in the longer term, would consider reactivating the pellet plant at

Sept-Iles, which has been idle since 1983. The plant, which had a production capacity of 8 Mt/yr, could be brought back in operation for a relatively low capital cost.^{3,4,5,6}

Tondu Plans DRI Plant

Tondu Corp., Houston, TX, is planning to build a large DRI plant on the Mississippi River in south Louisiana between Baton Rouge and New Orleans. The greenfield plant is expected to produce as much as 1.5 Mt/yr of DRI. Tondu decided to use Midrex technology and, in January, signed a letter of intent with a consortium consisting of Lurgi, Lockwood Greene, and H.B. Zachary to design and construct the facility on a lump sum, turnkey basis. The project includes marine facilities for iron ore unloading and DRI loading into river barges. Pending permit approval, construction should start in the spring of 1997. The plant will use imported iron ore in the form of lump ore or pellets and the product will be sent up the Mississippi and Ohio Rivers to steel mills. The plant's infrastructure has been designed to accommodate additional DRI and related facilities.⁷

Icebreaker to be Modernized

The Lake Carriers Association (LCA) announced the decision by Congress to modernize the U.S. Coast Guard Icebreaker Mackinaw. The Coast Guard Authorization Bill of 1996 directs the Coast Guard to develop plans and a cost estimate for reengineering and other modifications that will permit the Cutter to continue to operate with a reduced crew while maintaining its ability to break ice around the clock when necessary. The LCA, which traces its roots back to 1880, was founded to represent companies operating U.S.-flag freighters on the Great Lakes. Its 14 members operate 59 vessels, which carried more than 90% of the iron ore produced in the United States from 1991 through 1995.^{8,9}

Inland Power Contract

Inland Steel Mining Co. and Minnesota Power agreed to a contract under which Minnesota Power would remain Inland's sole electric supplier for the next 11 years. In return for agreeing to the long-term contract, Inland will receive lower cost electricity.^{10,11}

¹Skills Mining Review. V. 8., No. 52, Dec. 28, 1996, pp. 4-5.

²Personal communication.

³North Limited News Release. Jan. 31, 1997.

⁴North Limited News Release. Feb. 2, 1997.

⁵Rance, D. C. The Canadian Iron Ore Industry. Skills Min. Rev., V. 86. No. 5, Feb. 1, 1997, pp. 4-7.

⁶Personal communication.

⁷Tondu Corp. News Release, Jan. 28, 1997.

⁸Lake Carriers Association News Release, Oct. 10, 1996.

⁹Lake Carriers Association. 1995 Annual Report.

¹⁰Minnesota Power News Release, Jan. 28, 1997.

¹¹Personal communication.

TABLE 1
U.S. PRODUCTION AND SHIPMENTS OF IRON ORE, BY DISTRICTS 1/
(Exclusive of ore containing 5% or more manganese)

(Thousand metric tons)

Period	Lake Superior		Other U.S.		Total 2/	
	Monthly	Year to date	Monthly	Year to date	Monthly	Year to date
Production:						
1995:						
December	4,991	62,026	48	427	5,039	62,450
1996:						
January	4,232	4,232	35	35	4,267	4,267
February	4,217	8,449	25	60	4,242	8,509
March	4,801	13,250	23	83	4,824	13,333
April	4,668	17,918	22	105	4,690	18,023
May	5,479	23,397	20	125	5,500	23,522
June	5,128	28,525	22	147	5,150	28,673 r/
July	5,771	34,296	22	169	5,793	34,465
August	5,752	40,048	119	288	5,871	40,336
September	5,590	45,638	25	313	5,615	45,952 r/
October	5,347	50,985	26	339	5,373	51,325 r/
November	5,503	56,488	24	363	5,527	56,852 r/
December	5,260	61,748	20	383	5,280	62,132
Shipments:						
1995:						
December	5,596	60,462	39	435	5,635	60,898
1996:						
January	3,363	3,363	12	12	3,375	3,375
February	1,315	4,678	21	33	1,336	4,711
March	2,357	7,035	25	58	2,382	7,094 r/
April	5,290	12,325	20	78	5,310	12,404 r/
May	6,317	18,328	21	99	6,338 r/	18,741 r/
June	5,925	24,253	17	116	5,942	24,684 r/
July	6,396	30,649	29	145	6,424	31,108 r/
August	6,230	36,879	29	174	6,259	37,367 r/
September	6,341	43,220	29	203	6,370	43,737 r/
October	6,232	49,452	23	226	6,256	49,993 r/
November	5,674	55,126	31	257	5,705	55,698 r/
December	6,036	61,162	19	276	6,055	61,753

r/ Revised.

1/ Excludes byproduct ore.

2/ Data may not add to totals shown because of independent rounding.

TABLE 2
U.S. PRODUCTION, SHIPMENTS AND STOCKS OF IRON ORE, BY DISTRICTS 1/
(Exclusive of ore containing 5% or more manganese)

(Thousand metric tons)

Period	Lake Superior		Other U.S.	Total 2/
	Michigan	Minnesota		
Production:				
1995:				
January	1,092 r/	3,736	58	4,885 r/
February	965 r/	3,371	56	4,393
March	1,111 r/	3,933 r/	29	5,073
April	1,041 r/	3,497	24	4,561
May	1,200	4,342	20	5,563
June	1,242	4,153	16	5,411
July	1,440	4,231	21	5,693
1996:				
January	1,014	3,219	35	4,267
February	1,106	3,111	25	4,242
March	1,124	3,677	23	4,824
April	1,027	3,641	22	4,690
May	1,304	4,176	20	5,500
June	1,273	3,855 r/	22	5,150
July	1,381	4,390	22	5,793
Shipments: 3/				
1995:				
January	1,389	2,526	34	3,949
February	96	1,287	49	1,432
March	587	2,298 r/	27	2,911 r/
April	1,184	4,225	46	5,455
May	1,361	4,918	45	6,325
June	849	4,534 r/	28	5,411 r/
July	1,037	4,800	29	5,867
1996:				
January	1,357	2,007	12	3,375
February	248	1,067	21	1,336
March	477	1,880	25	2,382
April	1,254	4,036	20	5,310
May	1,746	4,571 r/	21	6,338 r/
June	1,507	4,418 r/	17	5,942
July	1,390	5,006	29	6,424
Mine stocks: 4/				
1995:				
January	701	2,886	83	3,670
February	1,571 r/	4,970	90	6,631 r/
March	2,095	6,605	93	8,793
April	1,951	5,877	115	7,943
May	1,790	5,301	91	7,182
June	2,183	4,921 r/	78	7,182 r/
July	2,587	4,352 r/	70	7,009 r/
1996:				
January	1,393 r/	3,536 r/	127	5,056 r/
February r/	2,252	5,580	131	7,962
March r/	2,899	7,611	129	10,639
April r/	2,671	7,216	131	10,019
May r/	2,229	6,821	131	9,180
June	1,994	6,258 r/	135 r/	8,388 r/
July r/	1,986	5,651	129	7,765

r/ Revised.

1/ Excludes byproduct ore.

2/ Data may not add to totals shown because of independent rounding.

3/ Includes rail and vessel.

4/ Includes mines, plants, and loading docks.

TABLE 3
U.S. PRODUCTION, SHIPMENTS AND STOCKS OF IRON ORE IN DECEMBER 1/
(Exclusive of ore containing 5% or more manganese)

(Thousand metric tons)

District	Production		Shipments 2/		Stocks 3/	
	1996	1995	1996	1995	1996	1995
Lake Superior:						
Michigan	1,199	1,123	1,460	1,668	2,174	1,736 r/
Minnesota	4,061	3,868	4,576	3,928	2,370	2,397 r/
Other U.S.	20	48	19	39	106	104
Total	5,280	5,039	6,055	5,635	4,650	4,237 r/

r/ Revised.

1/ Excludes byproduct ore.

2/ Includes rail and vessel.

3/ Includes mines, plants, and loading docks.

TABLE 4
CANADA: SHIPMENTS OF IRON ORE

(Thousand dry metric tons)

Period	Newfoundland	Quebec	Ontario	British Columbia	Total 1/
1995:					
December	1,442	1,473	83	6	3,004
Year total	19,969	14,121	1,020	83	35,193
1996:					
January	477	686	42	8 r/	1,213 r/
February	646	927	46	8 r/	1,627 r/
March	444	743	49	8 r/	1,243 r/
April	2,075	741	36	8 r/	2,859 r/
May	1,343	1,927	45	9 r/	3,324
June	1,653	405	43	7 r/	2,108 r/
July	1,308	995	38	7	2,348
August	2,082	867	40	7 r/	2,996 r/
September	2,705	906	58	8 r/	3,676
October	2,350	1,551	114	8	4,024 r/
November	2,570	1,165	111	8	3,855
December	NA	NA	NA	NA	NA

r/ Revised. NA Not available.

1/ Data may not add to totals shown because of independent rounding.

Source: Natural Resources Canada.

TABLE 5
CONSUMPTION AND STOCKS OF IRON ORE AND AGGLOMERATES AND
BLAST FURNACE PRODUCTION OF HOT METAL AT U.S. IRON AND STEEL PLANTS

(Thousand metric tons)

Consumption of ores and agglomerates				
Consumption by source	November		Year to date	
	1996	1995	1996	1995
United States ores	4,533	4,783	51,848	53,485
Canadian ores	615	681	6,883	7,462
Foreign ores	591	707	6,874	7,020 r/
Total 1/	5,740	6,170	65,604	67,966
Consumption by process				
Blast furnaces	5,182	5,480	59,400	61,954
Steel furnaces	7	4	78	54
Agglomerating plants 2/	543	685	6,082	5,930
Miscellaneous 3/	8	2	43	28
Total 1/	5,740	6,170	65,604	67,966
Stocks of ores and agglomerates				
Storage point	November 30			
	1996	1995		
Furnace yards	17,816	16,972		
Receiving/transfer docks	2,195	2,250		
Total consumer	20,011	19,222		
Blast furnace production of hot metal				
	November		Year to date	
	1996	1995	1996	1995
Hot metal and pig iron produced in blast furnaces	3,908	4,298	45,259	46,582
No. of blast furnaces operating on the last day of the month	37	41	XX	XX

r/ Revised. XX Not applicable.

1/ Data may not add to totals shown because of independent rounding.

2/ Iron ore and iron ore concentrates consumed in agglomerating plants not located at the mine site.

3/ Sold to nonreporting companies or used for purposes not listed.

Sources: American Iron Ore Association (consumption of iron ore) and American Iron and Steel Institute (production of hot metal and pig iron).

TABLE 6
U.S. EXPORTS OF IRON ORE AND AGGLOMERATES, BY COUNTRY
OF DESTINATION AND TYPE

(Thousand metric tons)

Country of destination and type	1996				
	2nd Quarter	3rd Quarter	September	October	November
Canada	1,288	2,391	817	939	101
Mexico	2	2	1	(1/)	(1/)
Other	5	2	(1/)	(1/)	(1/)
Total 2/	1,295	2,394	818	940	102
Pellets	1,267	2,380	811	934	101
Other	28	14	7	5	(1/)
Total 2/	1,295	2,394	818	940	102

1/ Less than 1/2 unit.

2/ Data may not add to totals shown because of independent rounding.

Source: Bureau of the Census.

TABLE 7
U.S. IMPORTS FOR CONSUMPTION OF IRON ORE AND AGGLOMERATES,
BY COUNTRY AND TYPE
(Exclusive of ore containing 20% or more manganese)

Country of origin and type of product	November 1996		Year to date 1996			Year to date 1995 (thousand metric tons)
	Thousand metric tons	Value 1/ (thousand dollars)	Thousand metric tons	Value 1/ (thousand dollars)	Value 1/ (dollars per ton)	
Australia	67	473	511	3,505	6.86	570
Bahamas, The	--	--	186	4,897	26.33	115
Brazil	269	7,113	4,863	125,212	25.75	4,552
Canada	1,292	42,418	8,601	286,791	33.34	8,075
Chile	--	--	164	2,787	16.99	25
Finland	--	--	9	453	50.33	9
Indonesia	--	--	--	--	--	(2/)
Japan	--	--	(2/)	1	8.75	--
Mauritania	--	--	275	5,088	18.50	242
Mexico	1	12	7	123	17.57	--
Norway	--	--	--	--	--	14
Peru	--	--	43	476	11.07	54
Spain	--	--	11	181	16.45	--
Sweden	--	--	48	2,047	42.65	47
Trinidad and Tobago	--	--	--	--	--	5
United Kingdom	--	--	(2/)	8	18.00	2
Uruguay	--	--	24	591	24.63	--
Venezuela	160	6,219	1,903	69,772	36.66	2,215
Total 3/	1,789	56,236	16,645	501,932	30.16 4/	15,925
Concentrates	124	2,144	1,325	23,557	17.78	1,484
Coarse ores	160	6,219	1,177	43,819	37.23	1,722
Fine ores	130	1,642	3,236	53,215	16.44	3,321
Pellets	1,227	42,351	10,233	362,577	35.43	8,389
Briquettes	--	--	--	--	--	54
Other agglomerates	148	3,881	665	18,274	27.48	946
Roasted pyrites	--	--	10	490	49.00	9
Total 3/	1,789	56,236	16,645	501,932	30.16 4/	15,925

1/ Customs value. Excludes international freight, insurance, and other c.i.f. charges.

2/ Less than 1/2 unit.

3/ Data may not add to totals shown because of independent rounding.

4/ Weighted average calculated from unrounded data by dividing total value by total tonnage.

Source: Bureau of the Census.

TABLE 8
U.S. IMPORTS FOR CONSUMPTION OF IRON ORE AND AGGLOMERATES IN NOVEMBER 1996
(Exclusive of ore containing 20% or more manganese)

(Thousand metric tons)

Country of origin	Type of product						Total 1/
	Concentrates	Coarse ores	Fine ores	Pellets	Briquettes and other agglomerates	Roasted pyrites	
Australia	--	--	67	--	--	--	67
Brazil	97	--	63	110	--	--	269
Canada	28	--	(2/)	1,117	147	--	1,292
Mexico	--	--	--	--	1	--	1
Venezuela	--	160	--	--	--	--	160
Total 1/	124	160	130	1,227	148	--	1,789

1/ Data may not add to totals shown because of independent rounding.

2/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 9
U.S. IMPORTS FOR CONSUMPTION OF PELLETS, BY COUNTRY

Country of origin	November 1996		Year to date 1996			Year to date 1995
	Thousand metric tons	Value 1/ (thousand dollars)	Thousand metric tons	Value 1/ (thousand dollars)	Value 1/ (dollars per ton)	
Bahamas, The	--	--	--	--	--	59
Brazil	110	4,305	1,644	62,468	38.00	1,044
Canada	1,117	38,045	7,689	265,669	34.55	6,436
Peru	--	--	--	--	--	36
Venezuela	--	--	899	34,440	38.31	814
Total 2/	1,227	42,351	10,233	362,577	35.43 3/	8,389

1/ Customs value. Excludes international freight, insurance, and other c.i.f. charges.

2/ Data may not add to totals shown because of independent rounding.

3/ Weighted average calculated from unrounded data by dividing total value by total tonnage.

Source: Bureau of the Census.

TABLE 10
U.S. IMPORTS FOR CONSUMPTION OF IRON ORE AND AGGLOMERATES, BY CUSTOMS DISTRICT
(Exclusive of ore containing 20% or more manganese)

(Thousand metric tons)

Customs district	November	Year to date	
	1996	1996	1995
Baltimore, MD (13)	362	3,834	4,000
Buffalo, NY (09)	--	(1/)	(1/)
Charleston, SC (16)	47	551	577
Chicago, IL (39)	402	2,776	2,641
Cleveland, OH (41)	81	749	1,421
Detroit, MI (38)	201	1,771	342
Duluth, MN (36)	--	51	--
El Paso, TX (24)	--	(1/)	--
Honolulu, HI (32)	--	(1/)	--
Houston - Galveston, TX (53)	--	51	43
Los Angeles, CA (27)	--	(1/)	(1/)
Mobile, AL (19)	515	3,511	3,292
New Orleans, LA (20)	63	1,288	1,365
Nogales, AZ (26)	1	7	--
Norfolk, VA (14)	--	5	--
Ogdensburg, NY (07)	--	(1/)	(1/)
Philadelphia, PA (11)	117	2,033	2,231
Portland, ME (01)	--	(1/)	--
San Diego, CA (25)	--	9	9
San Juan, PR (49)	--	11	5
Total 2/	1,789	16,645	15,925

1/ Less than 1/2 unit.

2/ Data may not add to totals shown because of independent rounding.

TABLE 11
U.S. IMPORTS FOR CONSUMPTION OF PELLETS, BY CUSTOMS DISTRICT

(Thousand metric tons)

Customs district	November	Year to date	
	1996	1996	1995
Baltimore, MD (13)	148	1,541	1,363
Charleston, SC (16)	47	313	373
Chicago, IL (39)	306	1,650	1,250
Cleveland, OH (41)	54	643	1,336
Detroit, MI (38)	200	1,747	333
Duluth, MN (36)	--	51	--
Houston - Galveston, TX (53)	--	41	43
Mobile, AL (19)	415	2,854	1,883
New Orleans, LA (20)	--	287	39
Philadelphia, PA (11)	58	1,107	1,769
Total 1/	1,227	10,233	8,389

1/ Data may not add to totals shown because of independent rounding.

Source: Bureau of the Census.